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**USDA FOREST SERVICE
INTERNATIONAL ACTIVITY REPORT**

SUBMITTED TO: USDA Forest Service – Forest Health Protection, International Activities Team

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ACTIVITY TITLE: *Armillaria* and *Heterobasidion* collection trip to Spain

ITINERARY/SCHEDULE:

Dates: From 8/17/08 to 8/22/08

Location: Vitoria-Gasteiz, Spain

Country: Spain

Official activity host: Dr. Eugenia Iturrutxa
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Activity: Collaborative research and collections of *Armillaria* and *Heterobasidion annosum*

- 8/18/08 – 8/21/08: Visited hosting laboratory (Dr. Iturrutxa) in Vitoria-Gasteiz, and conducted *Armillaria* and *Heterobasidion* collection trips, a total of 22 isolates (17 *Armillaria* and 5 *Heterobasidion*) were collected from the following field sites (**Figs. 1 and 2**).
 - 1) Douglas-fir (*Pseudotsuga menziesii*) plantation (Saldropo, Spain)
 - 2) Lawson cypress (*Cupressus lawsoniana*) stands (Otxandio, Spain)
 - 3) Radiata pine (*Pinus radiata*) stands (Sollano, Spain)

CURRENT STATUS OF COLLECTED FUNGAL ISOLATES AND FUTURE DIRECTIONS:

Currently, we are conducting genetic analyses of *Armillaria* isolates collected from Spain. Genetic analyses will characterize *Armillaria* isolates for comparisons with isolates from the western USA, Canada, Asia, and Europe. Understanding the genetic relationships within this pathogen group is essential to understand its global distribution, potential for invasiveness, potential for hybridization with endemic pathogens, and potential adaptation to climate change. This collection trip will offer a unique opportunity to monitor *Armillaria* root disease and prevent new introductions into North America or vice-versa. And, it helps improve sustainability and productivity of forest resources in the United States as well as Spain.



Fig. 1. (A) and (F) *Armillaria* collection site - *Pseudotsuga menziesii* stand (Saldropo, Spain), (B) and (C) *Armillaria* bark fans, (D) rhizomorphs, (E) *Armillaria* collection site - *Cupressus lawsoniana* (Otxandio, Spain)



Fig 2. (A) *Heterobasidion* collection site - *Pseudotsuga menziesii* stand (Saldropo, Spain), (B) and (C) Fruiting bodies of *Heterobasidion*, and (D) *Heterobasidion* collection site – *Pinus radiata* stand (Sollano, Spain)